

REMARKS

The Office Action dated March 31, 2003 has been received and carefully noted. The preceding amendments and the following remarks are submitted as a full and complete response thereto. Claims 1 and 2 have been amended. Claims 3-15 have been added. No new matter has been added or amendments made which raise new issues that require further consideration or search. Accordingly, claims 1-15 are pending in this application and are submitted for consideration.

Applicants respectfully submit that each of claims 1-15 recites subject matter which is neither disclosed nor suggested in the cited prior art. Applicants respectfully submit that this subject matter of the presently claimed invention is unobvious to a person of ordinary skill in the art. Applicants therefore requests favorable consideration of claims 1-15.

In paragraphs 1 and 2, the Examiner rejects claims 1 and 2 under 35 U.S.C. §103(a) as obvious over JP 56-081649 to Masayuki et al.

The Office alleges that Masayuki et al teach a contact material consisting of 2-20wt%Ni, 0.5-5wt%Li₂O, and a balance of silver. The Office further alleges that Masayuki et al teach that by adding Li₂O, the short circuit interrupting performance and the melt sticking resistance can be enhanced (see English abstract).

The Office acknowledges that Masayuki et al do not teach adding Li_2CO_3 . However, the Office alleges that the current claims do not require the presence of Li_2CO_3 , but only the presence of 0.01 to 0.5 wt% of metal Li as an additive.

The Office also states that it is well settled that if a product is claimed in the form of a product-by-process claim that defines the product only in the manner it is obtained and the prior art discloses a product that is substantially the same as the product being claimed, it becomes the applicants' burden to show that any process steps of the claim result in a product materially different from the disclosed prior art.

The Examiner concludes that since Masayuki et al allegedly teach an Ag-Ni-Li composition with overlapping ranges, a prima facie case of obviousness has been established.

Claim Amendments

Applicants have amended the claims to

- (1) make clearer that the claims do require the presence of a specified amount of Li_2CO_3 , though this amount is expressed in terms of Li metal; and
- (2) recite product claims devoid of process limitations.

With respect to (1), Applicants would like to emphasize that in context of the

make and break contact material according to the present invention, the expression "Li₂CO₃ powder in an amount corresponding to 0.01 to 0.50 wt % of Li metal" is a way to express the amount of Li₂CO₃, not the amount of metallic Li per se, present in the alloy.

Applicants respectfully submit that the amount of Li₂CO₃ present in the alloy according to the present invention has been expressed throughout the application in terms of Li metal. This was done for historical reasons. Internal oxidation is a conventional method for producing electric contact material. In the context of internal oxidation it is quite common, as a way of standardization, to define the components of the contact material in terms of the corresponding metal. Please see for example U.S. Patent No. 3,933,485 to Shibata, a copy of which is attached for the Examiner's convenience.

Non-Obviousness Over JP-A-56-81649

Comparison between Present Invention and JP-A-56-81649

Both the present invention and JP-A-56-81649 are directed to an Ag-Ni based alloy contact material. However, the present invention as claimed is directed towards a make-and-break contact material of Ag-Ni based alloy containing Li₂CO₃ in an amount corresponding to 0.01 to 0.50 wt% of Li metal. JP-A-56-81649, on the other hand, discloses an Ag-Ni based alloy contact material containing 0.5-5.0%

Li_2O .

Alloys according to the present invention and the alloys according to JP-A-56-81649 differ from each other in that Li either exists in the form of carbonate or oxide, respectively, which results in different properties.

The present inventors were in fact engaged in the development of a wide range of Ag-oxide based contact materials. Oxide was initially used because of its excellent stability and its resistance to changing properties over time.

However, the present inventors' research revealed that Li_2O , as opposed to other oxides, has the disadvantage of absorbing water vapor from the air easily and, as a result, decomposing quickly to LiOH .

Further research by the inventors lead to the discovery that Ag-Ni-based alloys containing Li_2CO_3 can provide make-and-break contact material with improved properties.

In the Ag-Ni alloy based make-and-break contact material according to the present invention, Li_2CO_3 exhibits arc extinguishing action similar to, e.g. CdO , which improves wear resistance. On the other hand, the Li_2O has been shown to

effectively reduce arc duration.

Applicants note that while JP-A-56-81649 states that their contacts containing Li_2O have remarkably enhanced short circuit interruption performance, high workability and consumption resistance, it is silent about the instability of Li_2O .

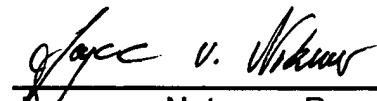
Accordingly, while the present invention and JP-A-56-81649 might appear similar in view of their common reference to Li, using Li_2CO_3 as compared to Li_2O results in Ag-Ni alloys with very different properties.

Applicants also note that historically, research has focused on developing Ag-oxide-based contact materials. Moving away from oxides is indeed a somewhat radical change and might open up new avenues of research.

If the Examiner would like to discuss any aspect of the application or this response, it is respectfully requested that the Examiner contact, by telephone, the Applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event that this paper is not timely filed, the Applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account No. 02-2135.

Respectfully submitted,



Joyce von Natzmer, Reg. No. 48,120
Attorney for Applicant
Rothwell, Figg, Ernst & Manbeck, P.C.
Suite 800, 1425 K Street, NW
Washington, D.C. 20005
Telephone: (202) 783-6040
Facsimile: (202) 783-6031

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